CLAIMS

What is claimed is:

1. A semiconductor device comprising:

a plurality of gates;

a multiplexer to select a clock signal out of a plurality of clock signals to toggle the plurality of gates in response to the selected clock signal to generate heat internally for burn-in; and

a thermal sensing circuitry to monitor an internal temperature.

2. The semiconductor device of claim 1, wherein the thermal sensing circuitry generates a signal in response to the internal temperature and the multiplexer selects the clock signal in response to the signal.

3. The semiconductor device of claim 1, wherein the thermal sensing circuitry comprises:

a thermal sensor; and

one or more fuses, being programmable based on temperature level, coupled to the thermal sensor and programmed to one or more temperature levels.

4. The semiconductor device of claim 1 further comprising a state machine to execute a plurality of test modes during burn-in.

5. A method to burn-in a semiconductor device comprising:

cycling through one or more burn-in patterns to cause the device to run at a frequency to generate heat internally;

monitoring an internal temperature of the device; and

adjusting the frequency in response to the internal temperature to maintain the internal temperature substantially at a predetermined level.

6. The method of claim 5, wherein monitoring the internal temperature of the device includes measuring the internal temperature with a thermal sensor in the device.

7. The method of claim 5, wherein adjusting the frequency includes:

selecting a lower frequency if the internal temperature is above a first predetermined limit; and

selecting a higher frequency if the internal temperature is below a second predetermined limit.

8. A method to burn-in a semiconductor device comprising:

programming one or more fuses of the device to set a target burn-in temperature prior to burn-in;

loading the device into a docking station, wherein the device remains in the docking station during burn-in; and

driving the device with a driver card to cause the device to start running burn-in, wherein the device generates heat internally during burn-in.

9. The method of claim 8, wherein the device and the driver card are mounted on a burn-in board.

10. The method of claim 9, wherein the device monitors an internal temperature during burn-in and regulates a frequency of operation of the device in response to the internal temperature to cause the internal temperature to remain substantially at the target burn-in temperature.

11. The method of claim 8, wherein the docking station remains substantially below 35°C during burn-in of the device and the target burn-in temperature is substantially at 91°C.

12. A computer system comprising:

one or more dynamic random access memory (DRAM) devices; and

a chipset coupled to the one or more DRAM devices, the chipset including a device, wherein the device comprises

a plurality of gates;

a multiplexer to select a clock signal out of a plurality of clock signals to toggle the plurality of gates in response to the selected clock signal to generate heat internally for burn-in; and

a thermal sensing circuitry to monitor an internal temperature.

13. The computer system of claim 12, wherein the thermal sensing circuitry generates a signal in response to the internal temperature and the multiplexer selects the clock signal in response to the signal.

14. The computer system of claim 12, wherein the thermal sensing circuitry comprises:

a thermal sensor; and

one or more fuses, being programmable based on temperature level, coupled to the thermal sensor and programmed to one or more temperature levels.

15. The computer system of claim 12, wherein the device further comprises a state machine to execute a plurality of test modes during burn-in.

16. The computer system of claim 12, further comprising a processor coupled to the chipset.

17. A docking station comprising:

a power supply rack;

a housing coupled to the power supply rack to hold a plurality of cables; and

a cart detachably coupled to the housing and the power supply rack to hold a plurality of burn-in boards, wherein a plurality of semiconductor devices are mounted on the plurality of burn-in boards during burn-in and the plurality of cables distribute power to the plurality of semiconductor devices.

18. The docking station of claim 17, wherein the plurality of semiconductor devices generate heat internally and maintain an internal temperature of the plurality of semiconductor devices substantially at one or more predetermined levels during burn-in.

19. The docking station of claim 17, further comprising:

a thermostat to monitor temperature inside the cart; and

one or more exhaust fans operated in response to the temperature inside the cart to draw air across the plurality of burn-in boards.

20. The docking station of claim 19, wherein the temperature inside the cart remains substantially below 35°C during burn-in of the plurality of semiconductor devices.

21. A driver card comprising:

a programmable logic device (PLD) to generate one or more burn-in patterns, wherein the one or more burn-in patterns are output to a plurality of semiconductor devices to cause the plurality of semiconductor devices to generate heat internally during burn-in of the plurality of semiconductor devices.

22. The driver card of claim 21, further comprising:

a clock generator to supply a first clock signal to the PLD; and

a voltage regulator, coupled to the PLD and the clock generator, to regulate voltage supply to the clock generator and the PLD.

23. The driver card of claim 22, wherein the PLD further generates a second clock signal and the first and second clock signals are output to the plurality of semiconductor devices.

24. The driver card of claim 23, wherein the second clock signal has a 90^{o} phase shift relative to the first clock signal.

25. The driver card of claim 21, wherein the PLD automatically generates the one or more burn-in patterns upon powering up of the PLD.